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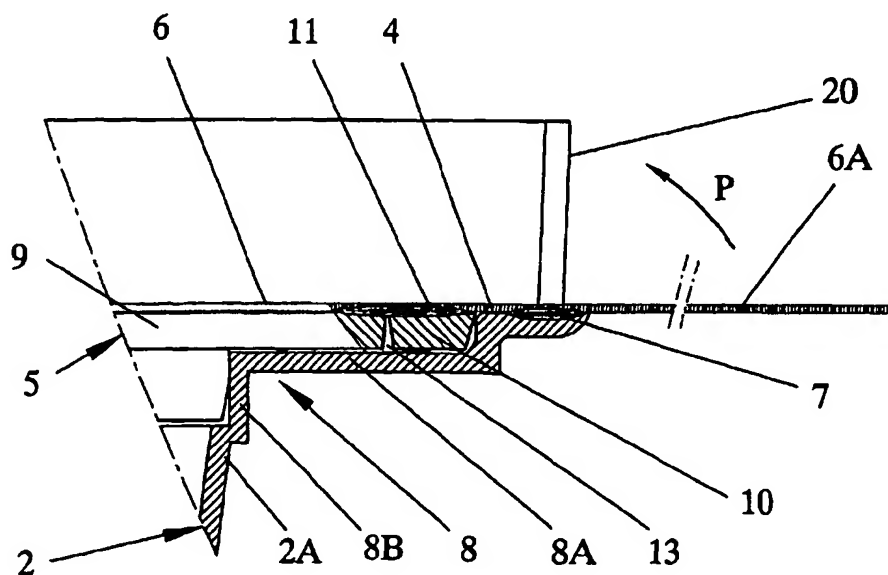
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(54) Title: A SEALED AND RECLOSABLE PACKAGE AND A METHOD OF PRODUCING SUCH A PACKAGE



(57) Abstract: A sealed and recloseable package comprises a container (2) and a lid (5) seated in an open top of the container. The lid has an extension (10) hinged to a main portion (9) thereof and a separate barrier layer (6) is provided over the lid and is locally heat sealed (7, 11) to the container as well as to the lid and to the lid extension. The package provides for a simple, inexpensive and rational production by making possible a quick change in production by replacing only the separate barrier layer (6) and the hinged lid extension (10) has the favorable effect of making it possible to easily open the sealed lid without the risk of destroying the local bond between the barrier layer and the lid. Also included is a method of producing such a package.

**TITLE:** A sealed and reclosable package and a method of producing such a package.

## **TECHNICAL FIELD**

5 The present invention relates generally to a package consisting of a container and a reclose-able lid and being sealed for protecting a product supplied to the container, and to a method of producing said sealed package.

## **BACKGROUND**

10 This general type of package is used for the packaging of various products that must either be protected from the exposure to air or additionally require the presence of an inert gas to preserve the product or its freshness. Examples of such products are foodstuffs, medical products and sanitary products. The sealed packages also serve the purpose of providing a tamper evident packaging that immediately informs a potential buyer of the fact that a package has been tampered with so that the seal is broken. This may be an indication of the fact that the  
15 packaged product may no longer be fresh or of the fact that items have been removed from the package. Additionally, it is desirable to be able to print product information on a cover of the package. In the past, a large variety of packages have been suggested for such sealed packaging of products, such as the type of disposable packages that are used for instance for ready-cooked meals, and that consist of a tray or container simply having a peelable cover that  
20 is heat sealed to an upper flange of the tray. This type of package does not permit reclosing of the cover and is therefore less suitable for packaging products that are not consumed in their entirety the first time the package is opened.

25 Several attempts have been made to produce packages that meet up with all of the above discussed requirements of not only providing a hermetic seal and a tamper evident packaging but also permitting reclosing of the package as well as the printing of information on its cover or lid. A widely used package for foodstuffs has a seal or cover sheet made from a printable film that is welded to an upper flange of the tray to provide the hermetic seal and the tamper-evident packaging feature. A separate, recloseable lid is then fitted onto the top of the tray,  
30 over the film, to permit reclosing of the package once the seal has been broken. This type of

package is expensive to manufacture and a further disadvantage is that the recloseable lid is not secured to the tray and may easily fall off during transport or handling.

5 Other prior art packages make use of multilayer covers or covers of a sandwich-type, composed of several layers that each possess a desirable property. A common problem with most prior art packages of this type is that they require the use of a hot melt adhesive for bonding the several layers to each other. The use of such hot melt adhesives is often undesirable for the manufacturer since it requires special measures both with regard to handling, application and storing. The production of the sealed packages is not very rational, especially in cases  
10 where a product comes in several compositions requiring different printed information on the covers. Complete covers will then have to be stored for each composition, and this further increases the production cost.

## SUMMARY

15 The invention overcomes the above problems in an efficient and satisfactory manner.

A general object of the invention is to provide a solution to the problem of providing a sealed package having a recloseable and printable cover and yet allowing for a rational and cost efficient production. In particular, it is an object of the invention to provide such a package  
20 that is easily opened without destroying the integrity of the recloseable cover.

Briefly, the above object is achieved by providing an improved sealed and recloseable package comprising a container and a lid seated in an open top of the container, wherein the lid has an extension hinged to a main portion thereof and wherein a separate barrier layer is  
25 provided over the lid and is locally heat sealed to the container as well as to the lid and to the lid extension. Accordingly, a package of the invention provides for a simple, inexpensive and rational production by making possible a quick change in production by replacing only the separate barrier layer. The hinged lid extension has the favorable effect of making it possible to easily open the sealed lid without the risk of destroying the local bond between the barrier  
30 layer and the lid.

In an embodiment of the invention, the heat seal between the barrier layer and the lid covers part of the extension, an area of the outer circumference of the main lid portion as well as a junction therebetween. This secures that gas or product from within the container cannot escape into the space between the lid and the barrier layer in the event that there should be a minor break or crack in said junction.

In a practical embodiment the extension is formed integral with the major lid portion and is hinged thereto through a weakening of the material, thereby leaving a bridging portion of reduced thickness.

In a further practical embodiment, a notch having converging walls forms the material weakening at the bridging portion. This configuration provides a simple, yet effective hinge allowing the lid extension to take up and distribute peeling forces.

In a package having a barrier layer with a gripping tab portion formed at its outer circumference, it is suggested that the gripping tab portion be aligned with the lid extension to ensure that a peeling action is started in the area of the lid extension.

It is another object of the invention to provide an improved, cost effective and rational method of producing a sealed recloseable package consisting of a container and a cover detachably received in the container and sealed to an upper surface of the container.

Briefly, this object is achieved by introducing a separate lid into a top opening of the container and by then extending a separate barrier layer over the container. A first heat seal is formed between the barrier layer and the container and finally a second heat seal is formed between the barrier layer and an outer circumference of the lid, extending also over a hinged extension portion of the lid.

In an embodiment of the invention the second heat seal is formed covering a part of the extension as well as a junction between the extension and a main lid portion and an area of the outer circumference of the main lid portion.

It is the object of another aspect of the invention to provide a solution to the problem of rationally and economically creating a desired atmosphere inside a sealed package. Briefly this object is achieved by providing a sealed package consisting of a container having a top opening, a recloseable lid received in the top opening and a barrier layer that is sealed to the container. At least one folding line is provided, extending across the lid from opposite side edges thereof and said folding lines divide the lid into at least two relatively foldable sections. With such a package it will be possible to provide a desired gas flow to and from the container, respectively, up to the point of sealing the package, thereby securing that a vacuum or a desired gas is present in the sealed package.

In practical embodiments the folding line is a notch extending from a bottom surface of the lid and partially through the material of the lid, to form a hinge; the notch is continuous, extending also through a rim that is formed on the bottom surface of the lid and that is intended to be received in a seat of the container.

In a further embodiment two folding lines extend across the lid and divide it into a center section and two foldable side sections. This provides for excellent gas flow to and from the container.

It is a further object of the invention to provide an improved cost effective and rational method of producing a sealed package that consists of a container and a cover detachably received in the container and sealed to the container, and that has a desired controlled atmosphere inside the sealed container.

Briefly, this object is achieved by introducing a separate lid into the container, by pushing one section of the lid into engagement with a seat and by folding at least one other section of the lid upwards from the seat. Air is sucked out from the container and/or a gas is introduced into the container, whereupon a separate barrier layer is extended over the top opening, the folded section/sections are pushed into engagement with the seat and the barrier layer is brought into engagement with the container. Finally, heat seals are formed between the barrier layer and the container and between the barrier layer and an outer circumference of the lid.

These and further objects of the invention are met by the invention as defined in the appended patent claims.

Advantages offered by the present invention, in addition to those described above, will be readily appreciated upon reading the below detailed description of embodiments of the invention.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

The invention, together with further objects and advantages thereof, may best be understood with reference to the following description taken together with the accompanying drawings, in which:

Fig. 1 is a top perspective view of an embodiment of a sealed package according to the invention;

Fig. 2A is a top perspective view of a container of the package illustrated in fig. 1;

Fig. 2B is a top plan view of the container illustrated in fig. 2A;

Fig. 3A is a bottom perspective view of a lid of the package illustrated in fig. 1;

Fig. 3B is a top plan view of the lid illustrated in fig. 3A;

Fig. 3C is a side view of the lid illustrated in fig. 3A;

Fig. 3D is an end view of the lid illustrated in fig. 3A;

Fig. 4 is a section through the hinged extension of the lid illustrated in figs. 3A-3D;

Fig. 5 is a schematic, exploded view illustrating the method of forming the sealed package according to the invention;

Fig. 6A is a partially sectioned view of a cutout portion of the sealed package of fig. 1;

Fig. 6B is a view corresponding to fig. 6A, but illustrating the initial stage of peeling open the package;

Fig. 7A is bottom perspective view corresponding to that of fig. 3A, of a second embodiment of a lid of the package illustrated in fig. 1;

Fig. 7B is a side view of the lid illustrated in fig. 9A;

Fig. 8 is a schematic view illustrating a modified method of forming a package according to the invention, using the lid of the second embodiment;

Fig. 9 is a bottom plan view of the upper heat sealing tool half of fig. 9; and

Fig. 10 illustrates an alternative embodiment of the hinged extension of the lid, in a view corresponding to that of fig. 4.

#### DETAILED DESCRIPTION OF EMBODIMENTS

A first embodiment of the invention will now be described with specific reference to drawing figures 1-4. The sealed package 1 of the invention is illustrated in fig. 1 and consists of a generally cup shaped container or tray 2 having a top opening 3 (see figs. 2A and 2B) that is closed by a lid 5 and sealed by an outer barrier layer 6 of a heat sealable material. A first heat seal or weld 7 and a second heat seal 11 locally bond and seal the barrier layer 6 to the container and to the lid, respectively, as will be described in detail further below.

With reference also to figs. 2A and 2B, the container has a closed side wall 2A and a closed bottom wall 2B. Extending around the upper edge of the side wall 2A is formed a frame consisting of a seat 8 for the lid 5, an upper substantially flat flange-like support surface 4 and an outer upstanding flange 20. The seat 8 has a first support portion 8A formed as a recess in the upper support surface 4 and serving to support the lid 5, and a second positioning and locking portion 8B formed as a substantially upstanding wall portion adjoining the side wall 2A and serving to receive a rim 9C provided on a bottom surface 9B of the lid 5. The lid 5 is received in the seat 8 in the sealed state of the package 1 as well for the purpose of temporarily reclosing the

package 1 to protect portions of a product (not shown) remaining therein. In the wall of the second portion 8B there are also provided a pair of opposing locating lugs 31 that serve to position a lid 5 properly in the container 2.

5 The upper flange-like surface 4 surrounds the top opening 3 and serves as a support surface for the heat sealable outer layer 6 that is welded to said surface when sealing the package 1. The upstanding flange 20 is formed at the outer circumference of the upper support surface 4 to strengthen and stabilize the container 2 and to protect the seal formed between the container 2, the lid 5 and the barrier layer 6. The strengthening flange 20 also provides means for easy  
10 stacking of the sealed packages on top of each other, as is well known in this field. It extends continuously around the major portion of the outer circumference of the upper surface 4, leaving only a portion 4A of said outer circumference free for accommodating a gripping or tearing tab 6A of the barrier layer 6. It should be emphasized, though that the flange 20 is optional and of no importance to the invention. In fact, such a flange will normally not be present in containers  
15 formed through the vacuum forming process.

The container 2 is manufactured from any suitable material and/or with the appropriate material thickness to be semi-rigid to rigid. In a presently preferred embodiment the container 2 consists of a thermoplastic material and is formed by injection molding or vacuum forming.

20 The lid 5 of the package 1 is illustrated in detail in figs. 3A-D and 4 and consists of a flat sheet like main portion 9 and an extension portion or flap 10 being hinged to the main portion 9 through a bridging portion 12. With reference specifically to fig. 4, a notch 13 extending over the entire junction between the main portion 9 and the extension 10 of the lid 5 forms the bridging portion  
25 12. The notch 13 is formed in the bottom surface 9B of the lid 5 partially through the material of the lid 5, so as to form a weakening of the material serving as a hinge between the main portion 9 and the extension 10. In the illustrated embodiment the notch 13 is formed having walls 13A, 13B converging towards said bridging portion 12. Tests have proven that such a configuration provides excellent folding properties for the extension, as will be explained further below.

30 On the bottom surface 9B of the lid 5 is provided the above mentioned rim or flange 9C that is intended to be received in the second positioning and locking portion 8B of the seat 8 of the



container 2. The outer shape of the rim 9C is substantially complementary to the inner shape of the second portion 8B of the seat 8. However, the outer dimensions of the rim are slightly larger than the inner dimensions of the second portion 8B to provide a slight grip therebetween in the closed position of the lid 5. This secures a tight fit for the lid 5 in the seat, and produces a locking effect when the lid is reclosed to protect products remaining in a package that has been once opened. The rim 9C is also provided with formations 32 having a shape that is complementary to that of the opposing locating lugs 31 provided in the second seat portion 8B of the container.

Like the container 2, the lid 5 is manufactured from any suitable heat sealable material or material composition and/or with the appropriate material thickness to be semi-rigid to rigid, and in the presently preferred embodiment consists of a thermoplastic material that is formed by injection molding or vacuum forming.

The heat sealable outer barrier layer 6 is a comparatively thin and flexible layer consisting of a material that is well suited for heat sealing or welding, such as, in the presently preferred embodiment, a polypropylene plastic (PP) film having a coating of heat seal lacquer on at least parts of its bottom surface facing the lid and container. The outer barrier layer 6 serves to protect a product in the container 2, either by simply providing a so called tamper-evident barrier, meaning that it will be readily apparent to a buyer if the sealed barrier has been broken. Such tampering could otherwise, if not detected, result in the contamination or degeneration of the product contents of the container or in that a specified number of items do not remain in the package. The barrier layer 6 is provided with a gripping tab portion 6A (see fig. 1 and figs. 6A and 6B) provided at its outer circumference and being aligned with the portion 4A of the circumference of the upper surface 4 of the container where the upstanding flange 20 is broken. Said gripping tab is also aligned with the extension portion 10 of the lid 5, as is disclosed in figs 6A and 6B and will be further discussed below.

With the above described configuration of the package 1 according to the invention it will now be possible to produce a sealed, tamper-evident recloseable package in a highly cost efficient and extremely rational way, while still securing that the seal is effective and is easily torn open without damaging the barrier layer, the lid or the container. In effect, this rational production is accomplished in a manner that will now be described with reference to the schematic illustration

of fig. 5. The sealed package 1 of the invention is produced in a heat sealing tool consisting of upper and lower tool halves 50 and 60, respectively, mounted in respective housings 51 and 61 respectively. Normally, the lower housing 61 is stationary and the lower tool half 60 is fixed therein, whereas the upper housing 51 is moveable as indicated by the double arrow M1 in fig. 5. Likewise, the upper tool half 50 is moveable in the upper housing, as indicated by the double arrow M2.

The package 1 is produced in one step from the three separate parts, namely the container 2, the lid 5 and the barrier layer 6. First, the container 2, having a product supplied to its interior, is positioned in a recess 63 in the lower tool half 60, said recess 63 having a shape being complementary to the outer shape of at least the container 2 upper portion to provide a proper seat therefore. Then, the lid 5 is placed in position in the container seat 8, whereby its correct position is secured by the cooperation of the pair of lugs 31 and formations 32 as well as through the engagement between the rim 9C and the second seat portion 8B. A barrier layer 6 normally having a print specific for the packaged product in question and being supplied from a roll 45, is pulled out from the roll and extended under the upper tool half 50. The upper housing 51 is lowered onto the lower housing 61 and the barrier layer 6 is punched out to the proper shape for fitting onto the container 2 and the lid 5, such as by means of a knife 46 integrated in the tool. Alternatively, the barrier layer 6 may also be cut to its proper contour using heat. Then the upper tool half 50 is lowered until a heat seal surface 52 thereof rests upon the container 2 and the lid 5, with the barrier 6 positioned therebetween. Specifically, the heat sealing surface 52 covers a portion of the upper flange like surface 4 of the container 2 and an outer area 5A of the upper surface 9A of the lid 5, including the extension portion 10. A corresponding heat seal surface, not shown, is provided in the lower tool half. Finally, the heat sealing surfaces are activated to form the seals.

In the above description, only one heat sealing surface 52 is provided to form the two separate heat seals 7 and 11 on the container 2 and on the lid 5. However depending upon the actual materials used for specific packages and the necessary temperatures required for forming the proper weld therein, it may in some applications be necessary to use two separate heat sealing surfaces for forming the two separate heat seals 7 and 11. This is done to secure that the materials of the container and the lid are not welded to each other.

With the above described production method, a very rational production is achieved, especially suitable for products that come in several flavors and/or compositions. In such cases, only the print on the barrier, and possibly on the container, may differ, whereas the lid is identical for the various packages. With the described method, the production may be changed very rapidly, since one and the same lid may be used and only the roll 45 of barrier layer needs to be replaced by the proper one for the specific package.

The peeling off of the lid 5 from the container 2, and specifically the importance of the hinged extension portion 10 to said peeling off, will now be described with reference to figs. 6A and 6B. When the sealed package 1 shall be opened for the first time, the tab 6A is gripped and pulled upwards and backwards, as indicated by the arrow P in fig. 6A, toward the package 1. This action initially causes the barrier layer 6 to be peeled off from the container surface 4 at the heat seal or weld 7 therebetween, adjacent the area 4A of its circumference. Continuing said peeling action, the separation of the barrier 6 from the container 2 will proceed along said first weld 7.

Simultaneously, the initial peeling action will also transfer forces to the second heat seal or weld 11 between the barrier 6 and the lid 5. However, as is illustrated in figs. 6A and 6B, in the area of the extension 10, the second heat seal 11 covers not only an area of the outer circumference of the main lid portion 9 but also part of the extension 10 and the bridging portion 12 or junction between the extension and the main lid portion. Furthermore, the gripping tab 6A of the barrier layer 6 is provided close to and aligned with the extension 10 of the lid 5. This has the favorable effect that the forces of the peeling action will cause the hinged extension 10 to bend upwards at the bridging portion 12, thereby initially relieving said second weld 11 to secure that the barrier 6 is not peeled off from the lid 5. During the continued peeling, said favorable effect of the hinged extension 10 remains, since forces acting upon the inner weld 11 are essentially acting in a plane parallel to the upper surface 9A of the lid. Thereby essentially reduced shear forces act upon said weld, and the seal 11 between the barrier 6 and the lid 5 remains intact, even when the barrier and lid are completely removed from the container 2.

The fact that the second heat seal 11 is extended over the extension, the bridging portion 12 as well as part of the main lid portion 9 also secures that gas or portions of a product supplied to

the container cannot escape into the area between the lid and the barrier layer in the event that there should be a minor break or crack in said bridging portion.

5 A second embodiment of the lid 105 of the inventive package is illustrated in figs. 7A and 7B. This embodiment of the lid 105 may be used together with the identical container and barrier as described above, and therefore those parts will not be specifically described for this embodiment. However, as indicated in fig. 7A, the lid 105 may basically be formed with or without a hinged extension portion 110, since its specific advantages are independent of the presence of such an extension 110.

10 Like in the above described embodiment, a rim or flange 109C is formed on the bottom surface 109B of the lid 105, intended to be received with a certain negative play in the seat of the container to be releasably gripped thereby. In the body or alternatively the main body portion 109 of the lid 105 is formed a number of, in the illustrated embodiment two, folding lines 143, 15 144 extending across the lid 105 from opposite edges thereof. The folding lines 143, 144 are here illustrated in the form of notches formed from the bottom surface 109B of the lid and partially through the material of the lid 105, so as to form a weakening of the material serving as a hinge. The notches 143, 144 are continuous and therefore extend also through the rim 109C. In this manner the lid 105 is divided into three sections, namely a center section 140 and two 20 side sections or wings 141, 142. The embodiment of figs. 7A and 7B is specifically useful for producing sealed packages containing products that will deteriorate if oxygen remains within the sealed package or that require the presence of a specific gas in the product compartment after packaging. Examples of such products are foodstuffs and sterile medical products.

25 The advantages of this embodiment of the lid 105 and the production of a corresponding sealed package will now be explained with reference to figs. 8 and 9. Using a heat sealing tool or machine of the same general type as described briefly in connection with fig. 5, the container 2 with its product is first positioned in the recess 63 in the lower tool half 60. Then, the lid 105 is positioned in the container seat 8, but in this case, only the center section 140 thereof is pressed 30 into the seat. The side sections or wings 141 and 142 are folded slightly upwards to provide free entrance into or escape from the interior of the container. The upper housing 51 is then lowered

onto the lower housing 61 sealing a tool chamber 70 between the two housings through seals 64 (one indicated in fig. 8) being provided in at least one of the mating surfaces of the housings.

5 With the tool chamber 70 sealed, air is sucked out from the chamber through channels exemplified by the channel 55 in the upper housing of fig. 8, creating a vacuum in the chamber and, through the open wing 141 of the lid 105, in the product compartment of the container 2. Where this is required, an inert or other gas is simultaneously introduced into the chamber 70 through a corresponding channel that is not specified. Through the other side or wing section 142, the gas is introduced into the product compartment of the container. It will be appreciated that the provision  
10 of the two opposite wing sections 141, 142 provides an excellent flow path for the gases.

The barrier layer 6 is punched out as described above. Then the upper tool half 50 is lowered until a tempering plate 56 therein contacts the wings 141, 142 of the lid 105 and pushes them into position in the container seat 8. The tempering plate 56 is supported in the upper tool half  
15 and is biased, exemplified by springs 54, in a direction out from the upper tool half 50, to be movable in the direction indicated by the arrow M3. Depending upon the used barrier material the tempering plate is provided to cool or alternatively heat the barrier layer 6 during welding, thereby eliminating wrinkling of the barrier material caused by temperature differentials. Then the upper tool half 50 is lowered until the upper heat seal surface 52 thereof rests upon the  
20 container 2 and the lid 105, with the barrier 6 positioned therebetween. A corresponding, co-operating heat sealing surface 65 of the lower tool half 60 is indicated in fig. 8. With the desired vacuum or gas still present in the product compartment of the container 2 the heat sealing surfaces 52, 65 are then activated to form the seals and to thereby hermetically close the package.

25 In the illustrated second embodiment of the lid 105 it is provided with two folding lines 143, 144 and three lid sections 140-142. However, the invention covers also variants thereof, including a lid having only one folding line and two lid sections, as well as lids having more than two folding lines and the corresponding number of lid sections. The former variant  
30 having only two lid sections is specifically suitable for vacuum-formed lids. During sealing of this variant one of the sections is preferably pressed down into the seat of the container and retained therein by engagement formations on the lid and/or on the container. The other

section, the wing section, is open to allow air or gas to leave or enter the container, respectively. The positioning of the folding lines on the lid may also be other than the one illustrated in figs. 7A and 7B.

5 Fig. 10 illustrates a possible modification of the hinged connection of the extension portion 10' of the lid 5'. Here, the notch 13' forming the weakened bridging portion 12' at the junction between the main lid portion 9' and the extension 10' is formed having substantially parallel side walls 13A' and 13B'.

10 The invention has been described above with specific reference to the illustrated embodiments thereof that are intended for use as a package for foodstuffs. However, it shall be understood that the invention is not restricted to these exemplifying embodiments or to such an application. The basic principles of the invention may likewise be applied to other embodiments for use in other fields where products for different reasons shall be stored in sealed compartments. One major  
15 area is for medical or sanitary products and others that require that the product is protected from the surrounding environment. In such a case the parts of the package, not least the heat sealable outer layer shall form an oxygen barrier. In addition thereto or in other applications, for packaging individual items such as screws and bolts, a main purpose of the barrier layer may be to provide a tamper-evident packaging. Therefore, modifications and variations of the invention that may be  
20 required in such applications fall within the scope of the invention. As an example of such modifications of the package that fall within the scope of the invention, all parts of the package may be manufactured from other materials than those indicated above, provided that they, or at least parts thereof, are suitable for heat sealing and provide sufficient rigidity or stability as well as protection for the specific application. As a specific example thereof, one or more parts of the  
25 package might be manufactured from cardboard material having at least portions thereof coated with or otherwise integrally connected to a layer of heat sealable material.

It should also be emphasized that although the packages illustrated herein all have a generally rectangular shape, the invention is applicable to all other shapes of packages sealed in this  
30 general manner, including square, circular and other shapes. Likewise, in all illustrated embodiments, the extension portion 10 of the lid 5 and the gripping tab 6A of the barrier layer 6 and the corresponding open area 4A of the container top have been positioned in the middle of one of the

short sides of the container. However, the actual positioning thereof around the circumference of the lid and the container, respectively, is not critical and the invention covers any such positioning. The matter of importance in this respect is that the extension portion 10 and the gripping tab 6A are positioned approximately in line with each other, that is in the same area of the circumference. This secures that the peeling forces are taken up properly by the extension portion, as described above.

It will be understood by those skilled in the art that various modifications and changes may be made to the present invention without departure from the scope thereof, which is defined by the appended claims.

**PATENT CLAIMS**

1. A sealed package (1) consisting of a container (2) having a top opening (3) and an upper, substantially flat surface (4) surrounding the opening, a recloseable lid (5) detachably received in the top opening and a printable and peelable barrier layer (6) that through a first heat seal (7) is sealed to the container along the upper surface thereof, **characterized in that**

- the lid consists of a main portion (9) and an extension (10) that is hinged to the outer circumference of said main portion;

- the lid and its extension are received in a seat (8) provided in the container opening, beneath the upper surface of the container; and

- the barrier film is locally bonded to the lid along at least a major portion of its outer circumference and to the lid extension through a second heat seal (11).

2. A sealed package (1) according to claim 1, **characterized in that** in the area of the extension (10), the second heat seal (11) covers part of the extension, a junction (12) between the extension and the main lid portion (9) and an area of the outer circumference of the main lid portion.

3. A sealed package (1) according to claims 1 or 2, **characterized in that** the extension (10) is integral with the major lid portion (9) and in the junction therebetween is hinged thereto through a weakening of the material of the lid (5), leaving a bridging portion (12) of reduced thickness.

4. A sealed package (1) according to claim 3, **characterized in that** said bridging portion (12) is formed by a notch (13) in the junction between the main portion (9) and the extension (10) of the lid (5), said notch having walls (13A, 13B) converging towards said bridging portion.

5. A sealed package (1) according to any of claims 1-4 wherein the barrier layer (6) has a gripping tab portion (6A) formed at its outer circumference, outside said first heat seal (7), **characterized in that** the gripping tab portion (6A) is aligned with the lid extension (10).

6. A method of producing a sealed package (1) consisting of a container (2) and a cover (5, 6) detachably received in a top opening (3) of the container and sealed to an upper surface (4)



of the container, **characterized in that**

- a separate lid (5) is introduced into a seat (8) in the top opening of the container (2);
- a separate barrier layer (6) is extended over the top opening of the container;
- a first heat seal (7) is formed between the barrier layer and the container upper surface; and
- 5      - a second heat seal (11) is formed between the barrier layer and an outer circumference of the lid (5), extending also over a hinged extension (10) of the lid.

7. A method according to claim, **characterized in that** in the area of the hinged lid extension (10) the second heat seal (11) is formed covering a part of the extension (10), a junction (12)  
10      between the extension and a main lid portion (9) and an area of the outer circumference of the main lid portion.

8. A sealed package (1) consisting of a container (2) having a top opening (3), a recloseable lid (105) detachably received in the top opening and a barrier layer (6) that is heat sealed to the  
15      container, **characterized by**

- at least one folding line (143, 144) extending across the lid (105), from opposite side edges thereof; and
- said folding line/lines dividing the lid into at least two relatively foldable sections (140, 141, 142).

9. A sealed package (1) according to claim 8, **characterized in that** the folding line/lines (143, 144) is/are notches extending from a bottom surface (109B) of the lid (105) and partially through the material of the lid, so as to form a weakening of the material serving as a hinge.

10. A sealed package (1) according to claim 9, wherein the lid (105) and a rim (109C) provided on its bottom surface (109B) are received in a seat (8) provided in the container (2), **characterized in that** the notches (143, 144) are continuous and extend also through the rim (109C).

11. A sealed package (1) according to any of claims 8-10, **characterized by** two folding lines (143, 144) extending across the lid (105) and dividing the lid into a center section (140) and two side sections (141, 142).

12. A sealed package (101) according to any of claims 8-11, **characterized by** a lid extension (110) that is hinged to the outer circumference of a main lid portion (109) containing said folding line/lines (143, 144), and in that the barrier layer (6) is locally bonded to the lid (105) along at least a major portion of its outer circumference and to the extension through a second heat seal (11).

13. A method of producing a sealed package (1) consisting of a container (2) and a cover (5, 6) detachably received in a top opening (3) of the container and sealed to an upper surface (4) of the container, **characterized in that**

- a separate lid (105) is introduced into the top opening of the container (2);
- one section (140) of the lid is pushed into engagement with a seat (8) in the container and at least one other section (141, 142) of the lid is folded upwards from the seat;
- air is sucked out from the container and/or a gas is introduced into the container;
- a separate barrier layer (6) is extended over the top opening of the container;
- the folded section/sections are pushed into engagement with the seat (8) and the barrier layer is brought into engagement with the upper surface (4);
- a first heat seal (7) is formed between the barrier layer and the container upper surface; and
- a second heat seal (11) is formed locally between the barrier layer and an outer circumference of the lid (105).

14. A method according to claim 13, **characterized in that** the second heat seal (11) is formed extending also over a hinged extension (110) of the lid (105) as well as over a junction (12) between the lid and said extension.

FIG. 1

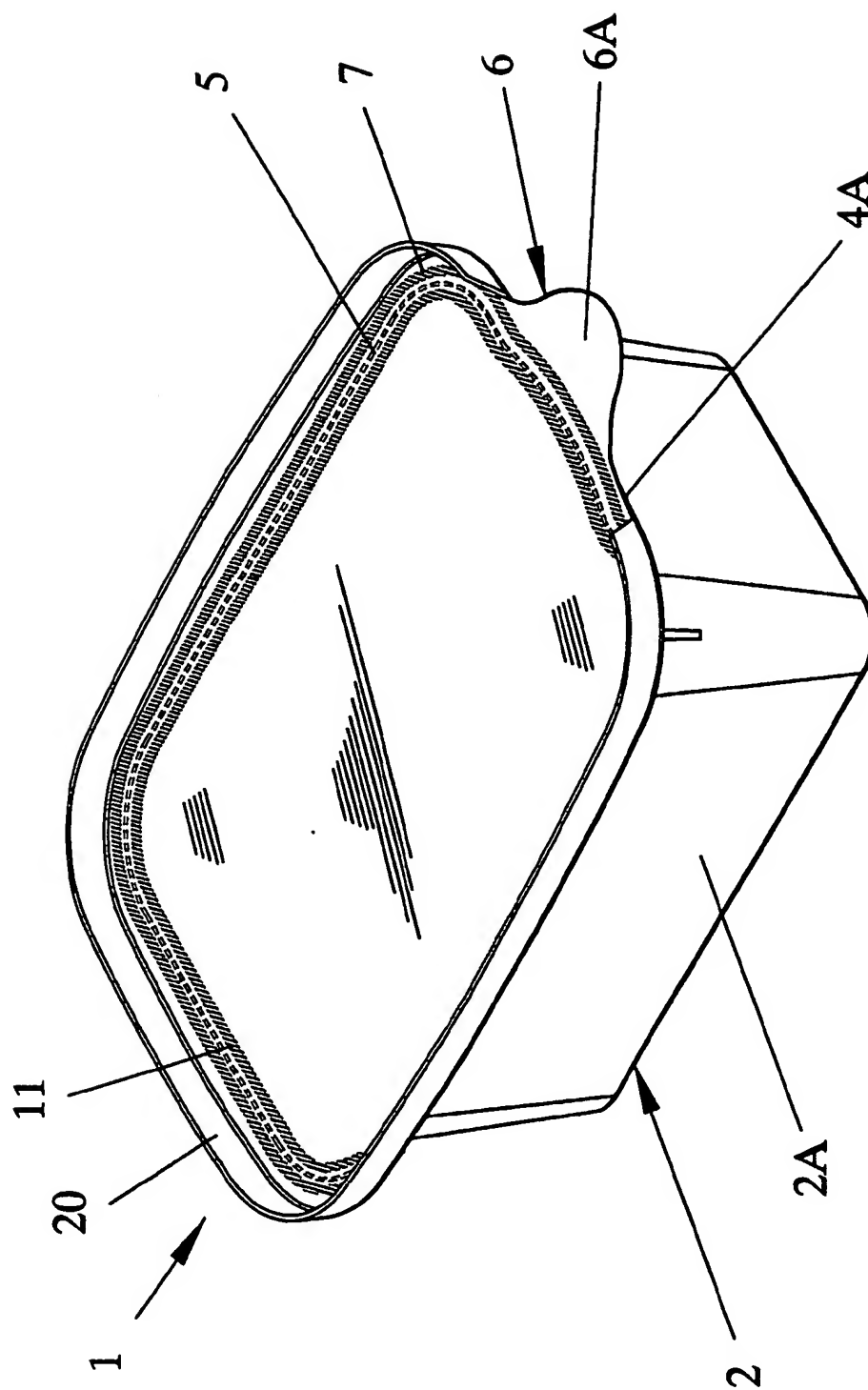


FIG. 2A

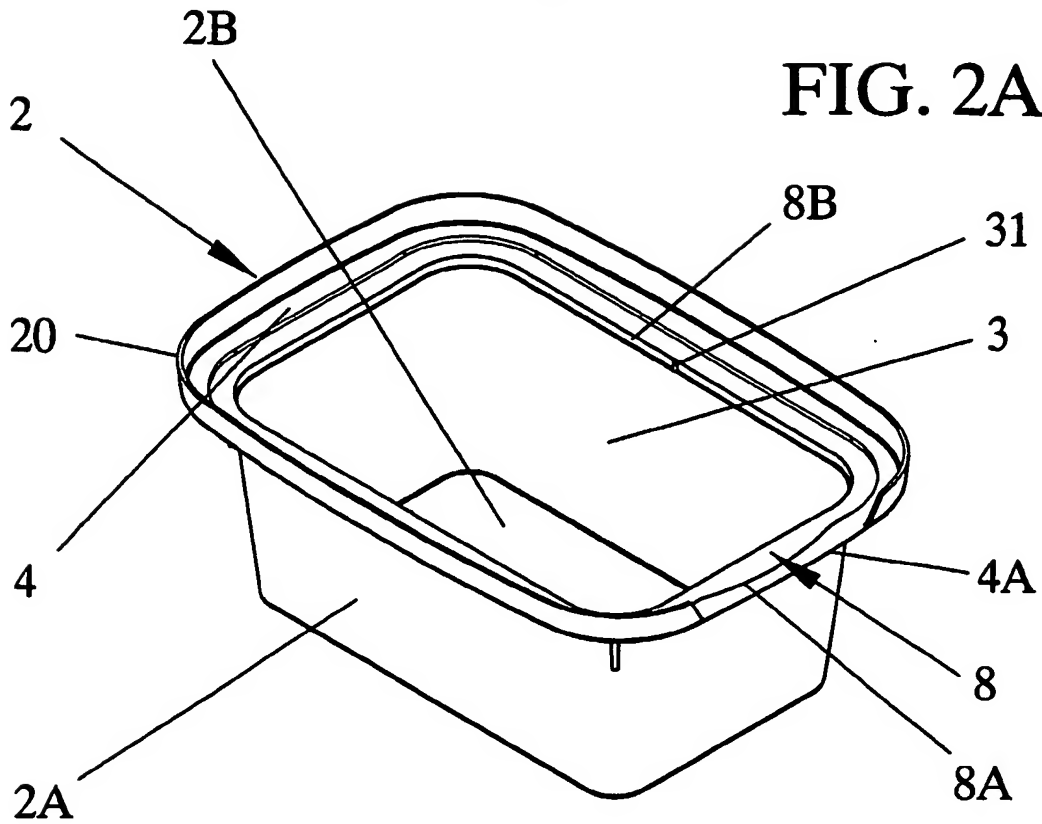
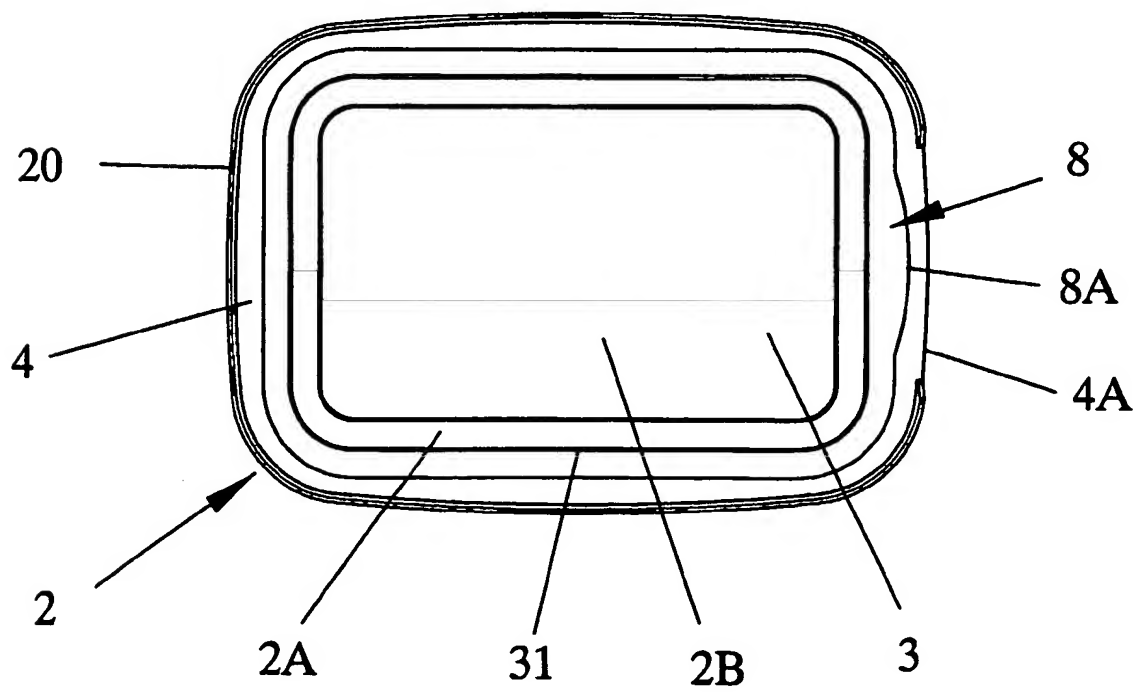


FIG. 2B



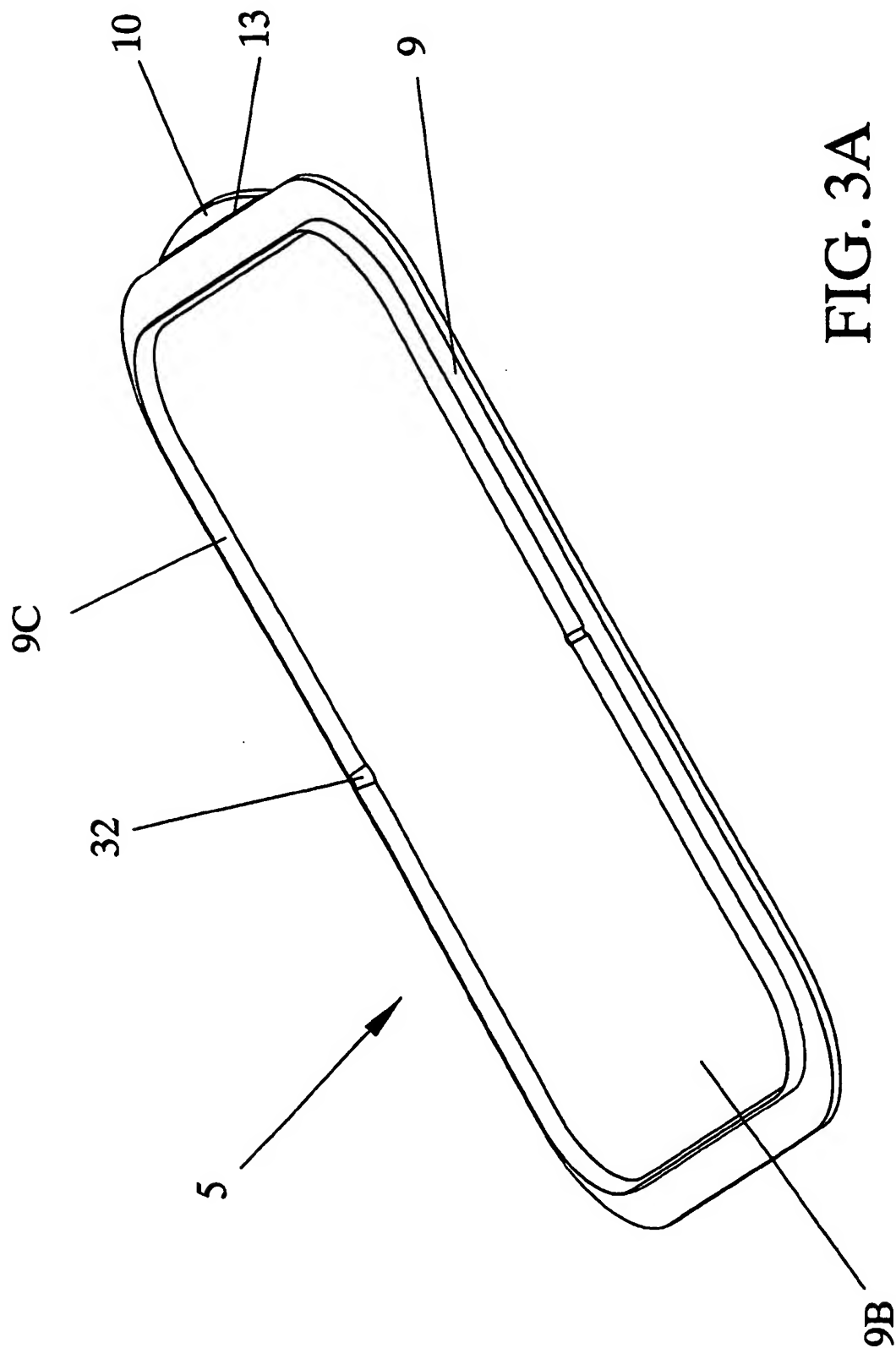


FIG. 3A

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FIG. 3B

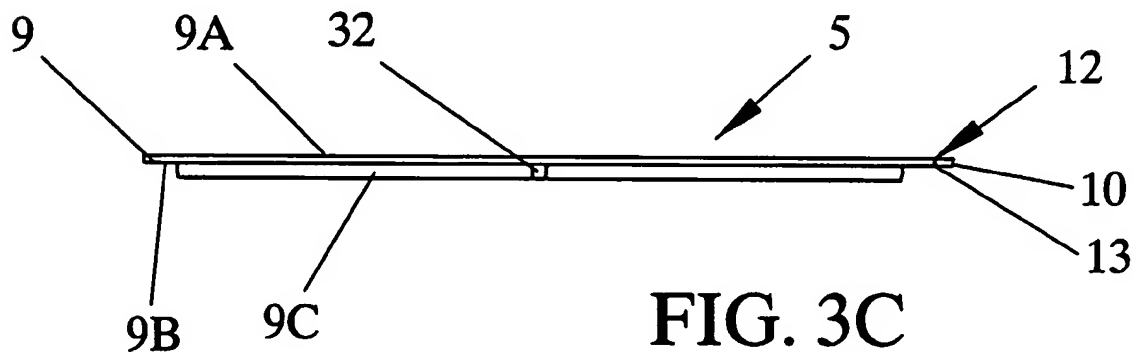
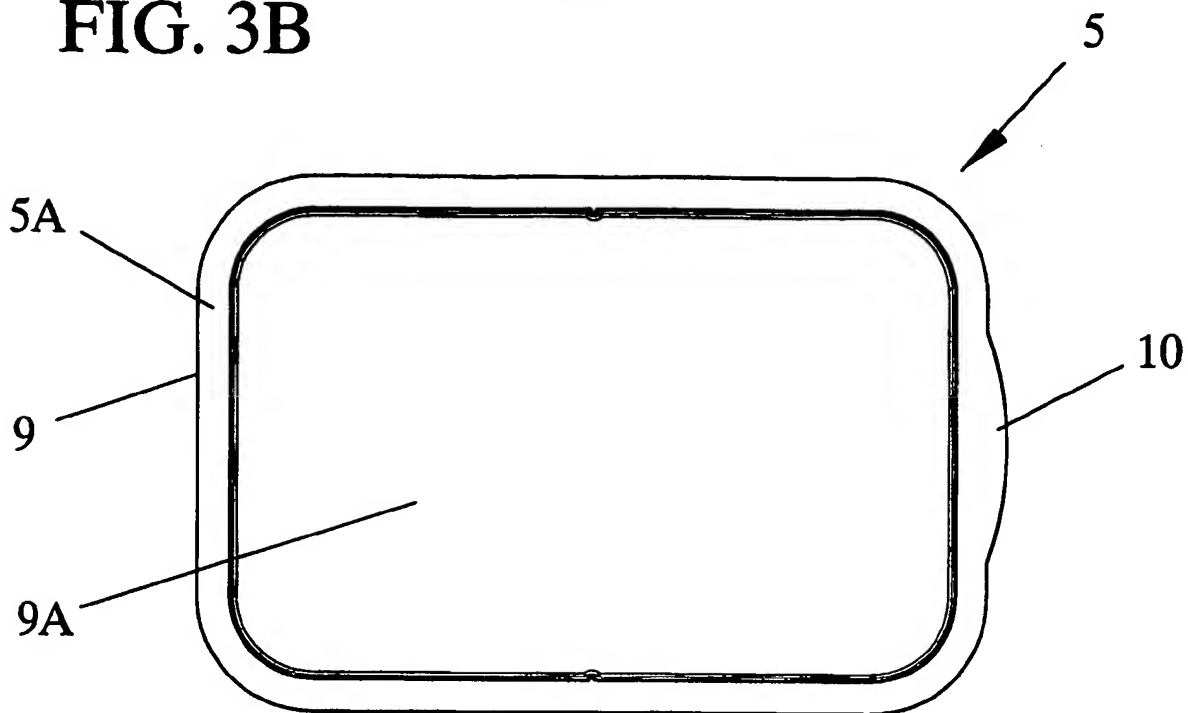


FIG. 3C

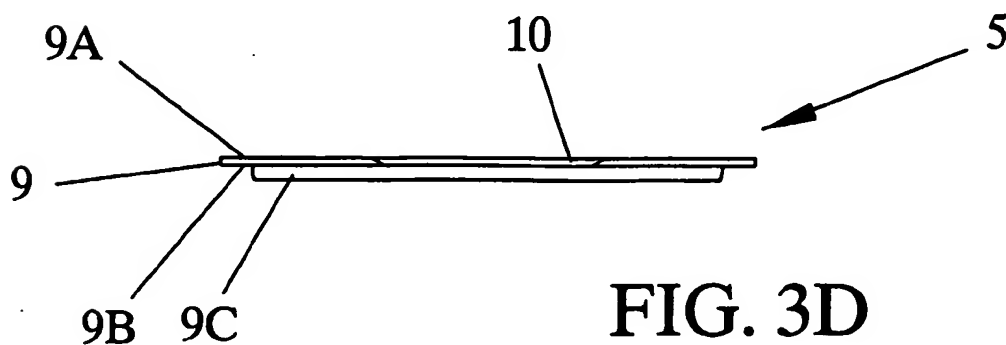


FIG. 3D

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FIG. 4

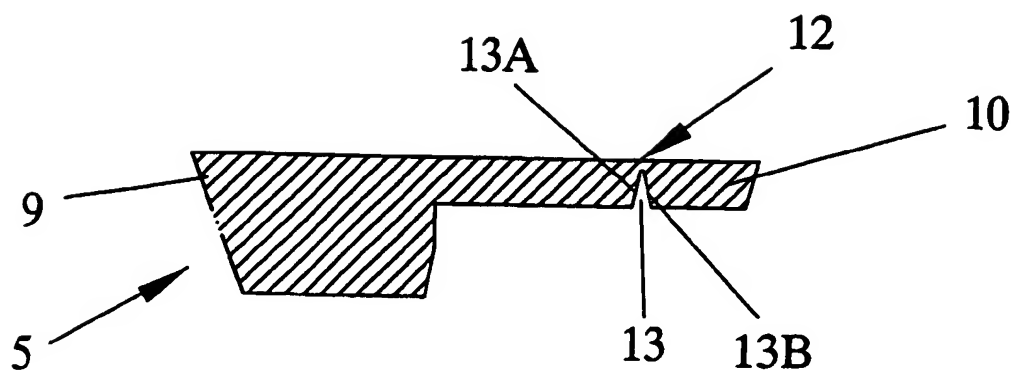


FIG. 10

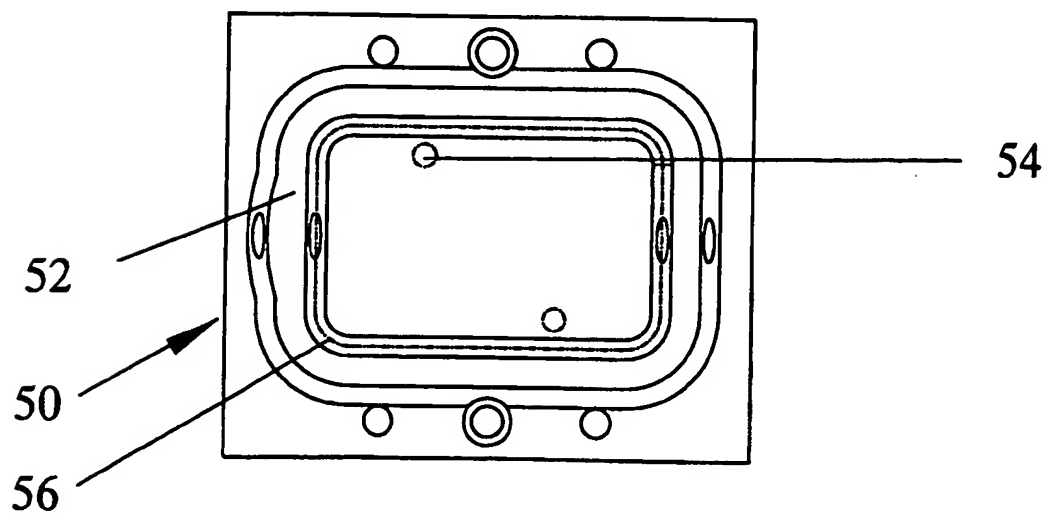
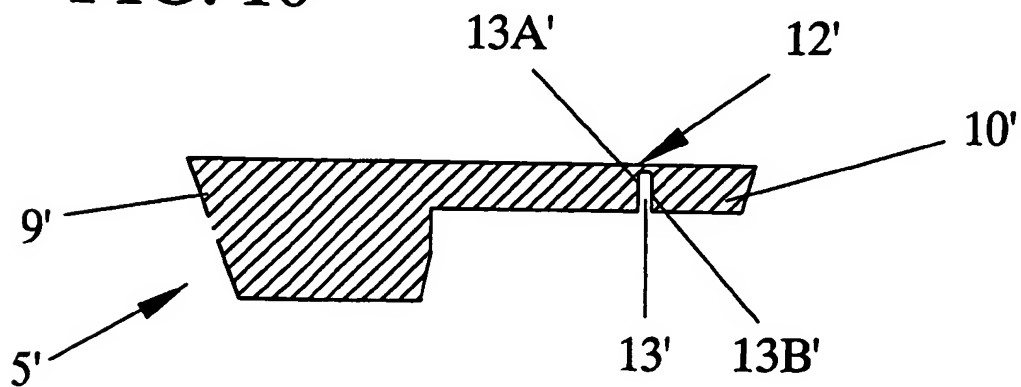
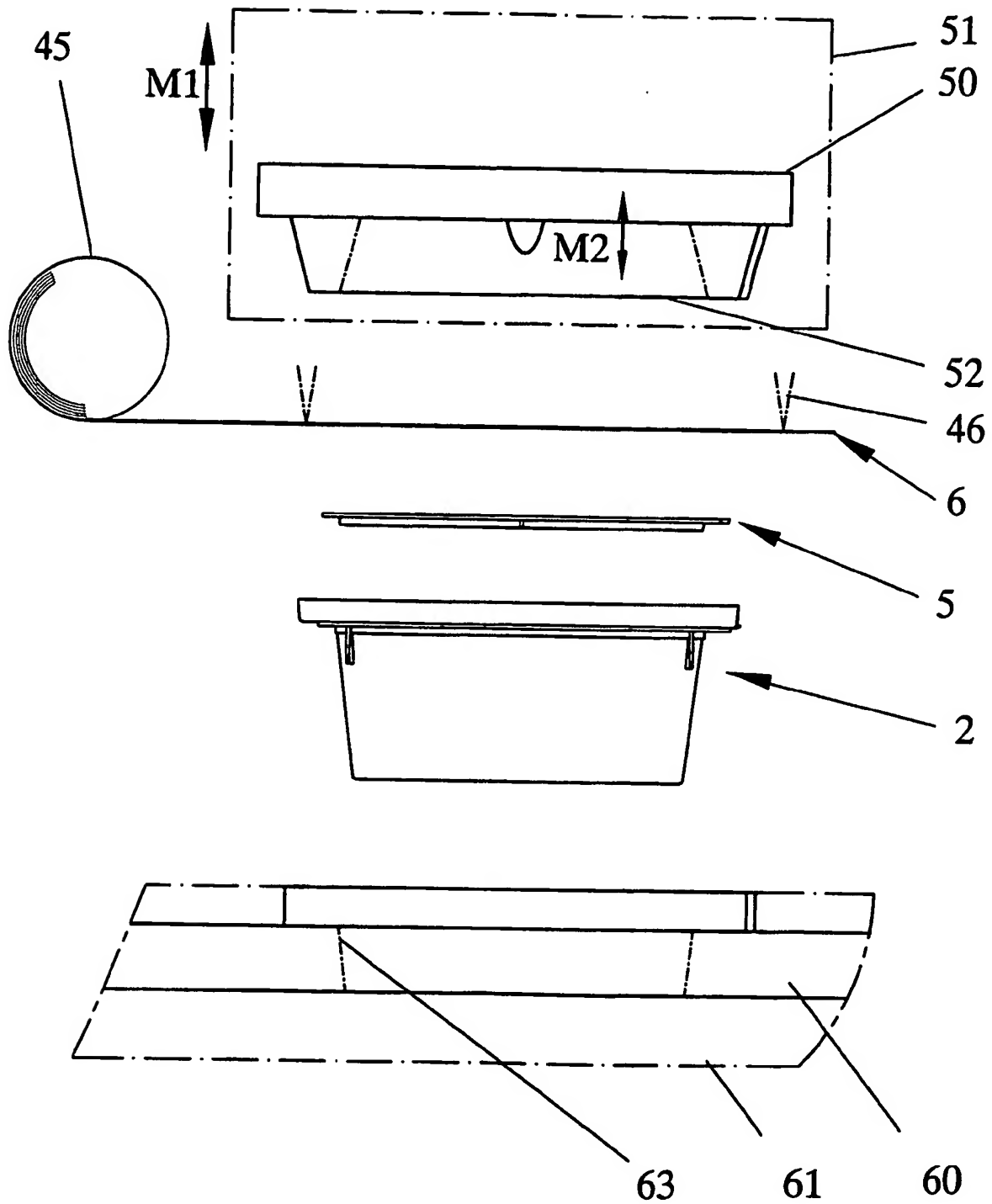


FIG. 9

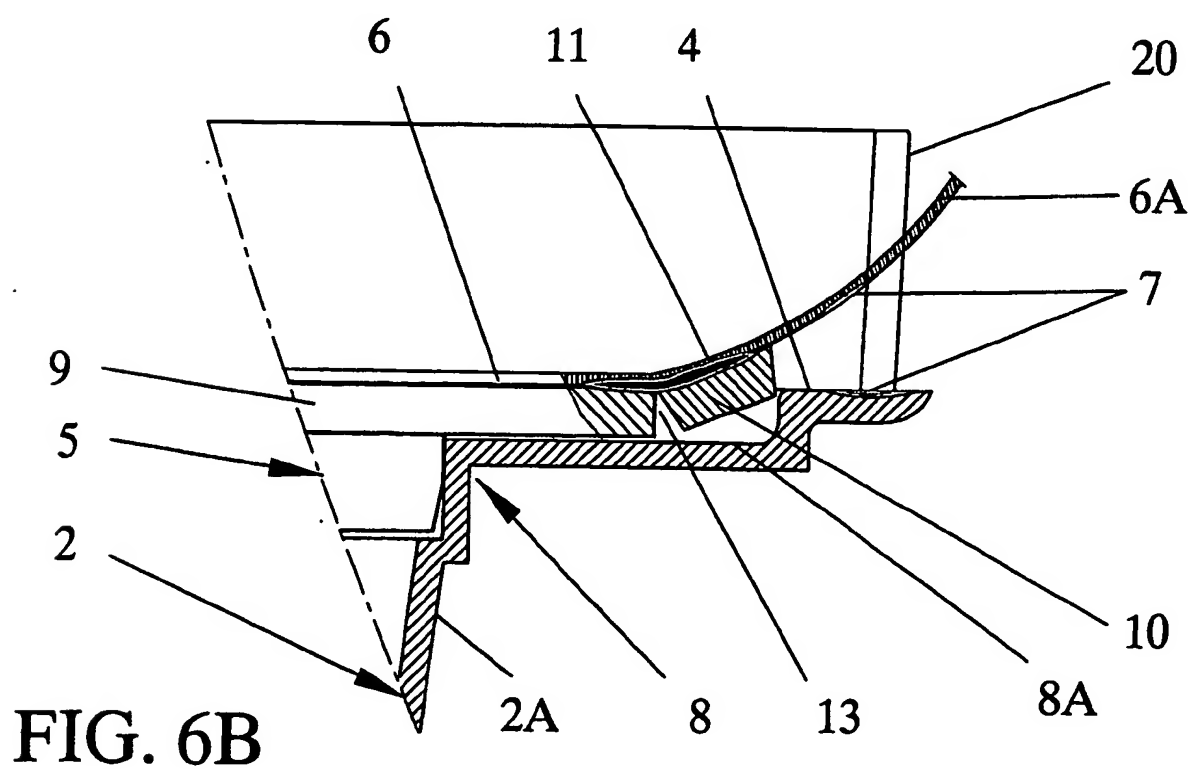
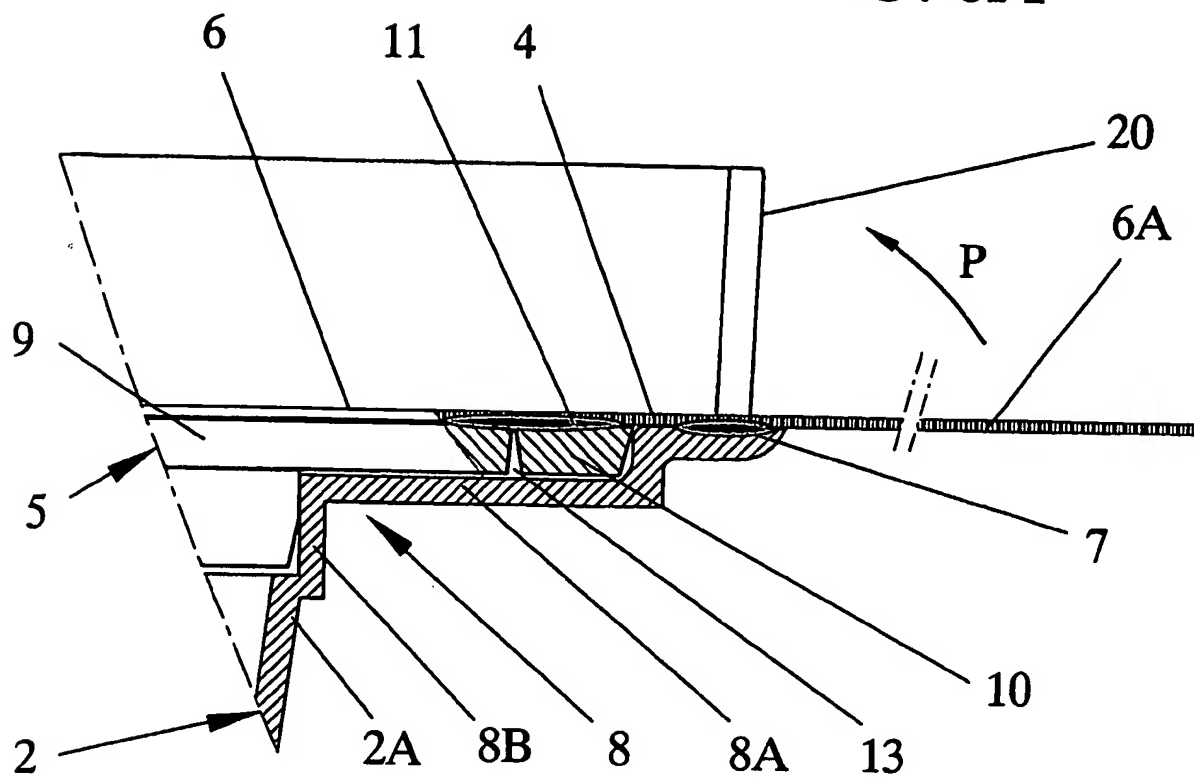
FIG. 5

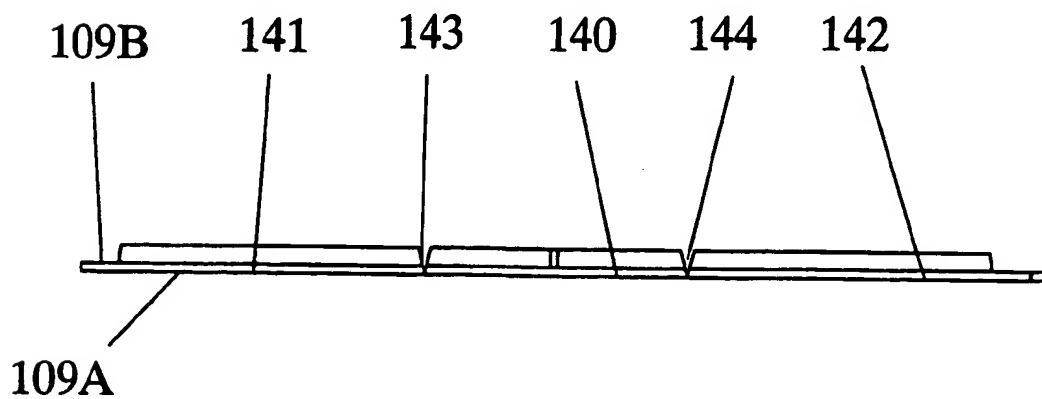
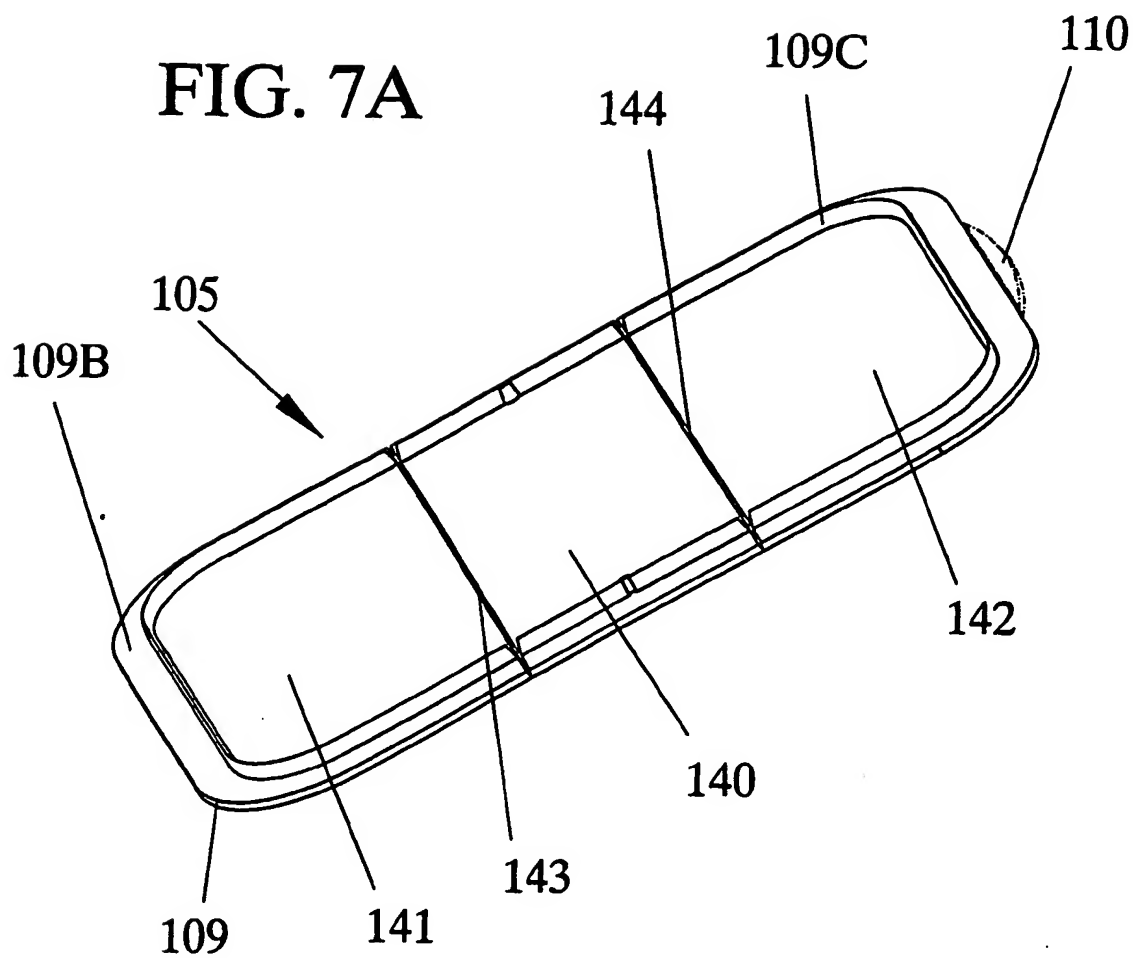




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FIG. 6A





**FIG. 7B**



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 03/01532

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: B65B 7/28, B65D 77/20

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: B65D, B65B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3481100 A (R.C. BERGSTROM), 2 December 1969 (02.12.69), column 2, line 42 - column 3, line 44 --	1-14
A	US 4040561 A (RAYMOND C. PHILIPPON), 9 August 1977 (09.08.77), column 4, line 1 - column 5, line 49 --	1-14
A	US 3561668 A (ROGER C. BERGSTROM), 9 February 1971 (09.02.71), column 1, line 42 - column 3, line 15 -- -----	1-14

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

## \* Special categories of cited documents:

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"&amp;" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

1 December 2003

10-12-2003

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

06/09/03

International application No.

PCT/SE 03/01532

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				DE	1561956 A	21/05/70
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				DE	2518088 A,C	13/11/75
				FR	2268689 A,B	21/11/75
				GB	1487113 A	28/09/77
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				NONE		